

Appendix L Default Pollution Control Combination

Calculation of Hexavalent Chromium Emission Rates
Default Pollution Control Combination (as presented in the Technical Benchmarking)

Emission Rate Calculations for the Default Pollution Control Combination (G_R1)

Source Type	before RC			after RC		before RC		After RC-CFM only								Total	
	B01	B24	B25	B11current	B11	B38current	B38	B08	B10	B32	B33	B34	B35	C79	C80		
Current Base Case Emission Rate (g/s)	3.55E-05			1.51E-04		3.32E-05		2.05E-06	2.39E-06	2.39E-06		2.39E-06	2.39E-06	2.04E-06	2.04E-06	2.35E-04	
2016 Reconfiguration Base Emission Rate (g/s)		1.78E-05	1.78E-05		7.53E-05		3.32E-05		1.19E-06	1.19E-06	2.05E-06	1.19E-06	1.19E-06	2.04E-06	2.04E-06	1.55E-04	
Uncertainty Applied		1.15	1.15		1.15		1.15		1.15	1.15	1.15	1.15	1.15	1.15	1.15		
2016 Base RC Emission Rate (g/s) with Uncertainty Factors applied		2.04E-05	2.04E-05		8.7E-05		3.82E-05		1.37E-06	1.37E-06	2.36E-06	1.37E-06	1.37E-06	2.34E-06	2.34E-06	1.78E-04	
Combination ID	Option Description																
G_R1	Facility reconfiguration (RC) + Electrostatic Precipitator (DEP) or WEP or DC for hot sources (1, 2 or 3) + substituting LSC refractory in the forehearth (11) + forehearth conversion to air/gas combustion (12)																
	Description of Reduction Components		DEP/WEP/DC	DEP/WEP/DC		DEP/WEP/DC +	DEP/WEP/DC +										
	Individual Reduction Description		1,2 or 3	1,2 or 3		(1,2, or 3)+11+12	(1,2, or 3)+11+12			Result of 12	Result of 12		Result of 12	Result of 12			
	Reduction Efficiency 1		95%	95%		95%	95%	0%	50%	50%	0%	50%	50%	0%	0%		
	Reduction Efficiency 2					10%	10%										
	Reduction Efficiency 3					86%	86%										
	Comments		Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	TotalER (g/s)
RC+(1,2 or 3)+11+12			1.02E-06	1.02E-06		Exhausted out B38		1.06E-06		6.87E-07	6.87E-07	2.36E-06	6.87E-07	6.87E-07	2.34E-06	2.34E-06	1.29E-05

Explanation of Calculations

Furnace:
The reconfiguration plans include taking the existing furnace (T107) out of service and restarting the T105 furnace. The emission rate for T105 furnace is estimated (conservatively) to be the same as the existing furnace as they will employ similar technologies and the same glass formulation. However, the emissions will be discharged from two existing (currently out of service) stacks B24 and B25. The only change to the furnace emission rates is the incorporation of a small uncertainty factor (15%) which was applied to all emission rates used in the technology benchmarking assessment. The technology for this pollution control option is a DEP/WEP or DC prior to discharge.

Forehearths:
The reconfiguration plans include removal of approximately half of the existing conventional forehearth which currently exhausts through stack B11 (B11current), therefore the current emission rate is divided by 2 to prior to the application of any reduction efficiencies related to the control option. There are no planned changes to the CFM forehearth (exhausting through B38current). An uncertainty factor (55%) is applied to the emission rates from both sections of forehearth. The uncertainty factor is calculated using the Methodology outlined in the Alberta Air Monitoring Directive, Chapter 5: Quality System. The technology to be implemented as part of this pollution control option (G_R1) would require the removal of the existing full scale prototype technologies currently applied to the CFM forehearth (B38current). Therefore the base emission rate prior the installation of the new technologies is similar to that of the downsized conventional forehearth. Therefore, the new emission rate calculation for the conventional forehearth is doubled to reflect this change. After the reconfiguration and implementation of this pollution control combination, all forehearth emissions will be exhausted through a single location at the current B38 stack.

Example Calculation for the changes to the Conventional Forehearth emissions (B11current)

New B11 ER, g/s= (Current B11 forehearth rate, g/s) / 2 (for reduction of forehearth area) x (uncertainty factor of 1.15)

New B11 ER, g/s= [0.000151 , g/s / 2] x 1.15

New B11 ER, g/s= 8.7E-05

B11 ER after technologies applied = New B11 ER x (1 - reduction efficiency of technologies)

B11 ER after technologies applied = New B11 ER, g/s x (1 - 95%) x (1-10%) x (1-86%)

B11 ER after technologies applied = 5.30E-07

After Reconfiguration and implementation of the control technologies, all forehearth emissions will be exhausted through a new stack at the B38 location (here referred to above as the "B38 Combined FH" stack

B38 Combined FH stack ER, g/s= [B11 ER after technologies applied] x 2

B38 Combined FH stack ER, g/s= 0.0000005 x 2

B38 Combined FH stack ER, g/s= 1.06E-06

General Ventilation Exhausts:

The reconfiguration plans include removal of approximately half of the existing conventional forehearth which is believed to be the greatest contributor to emissions leaving the facility through most of the general ventilation exhausts. An uncertainty factor (52%) is applied to all of the general ventilation emission rates. The uncertainty factor is calculated using the Methodology outlined in the Alberta Air Monitoring Directive, Chapter 5: Quality System. Therefore, the emission rates from 5 of the general ventilation exhaust fans are reduced by 50% based on the conventional forehearth downsizing. The installation of the control technologies on the conventional forehearth is anticipated to reduce the furnace hall emissions by the same reduction efficiency.

Example Calculation for the changes to General Ventilation Source B32

New B32 ER, g/s= (current B32 ER, g/s) / 2 (for reduction of forehearth area) x 1.52 (Source Testing Uncertainty Factor) x (1-reduction efficiency for conventional forehearth technology)

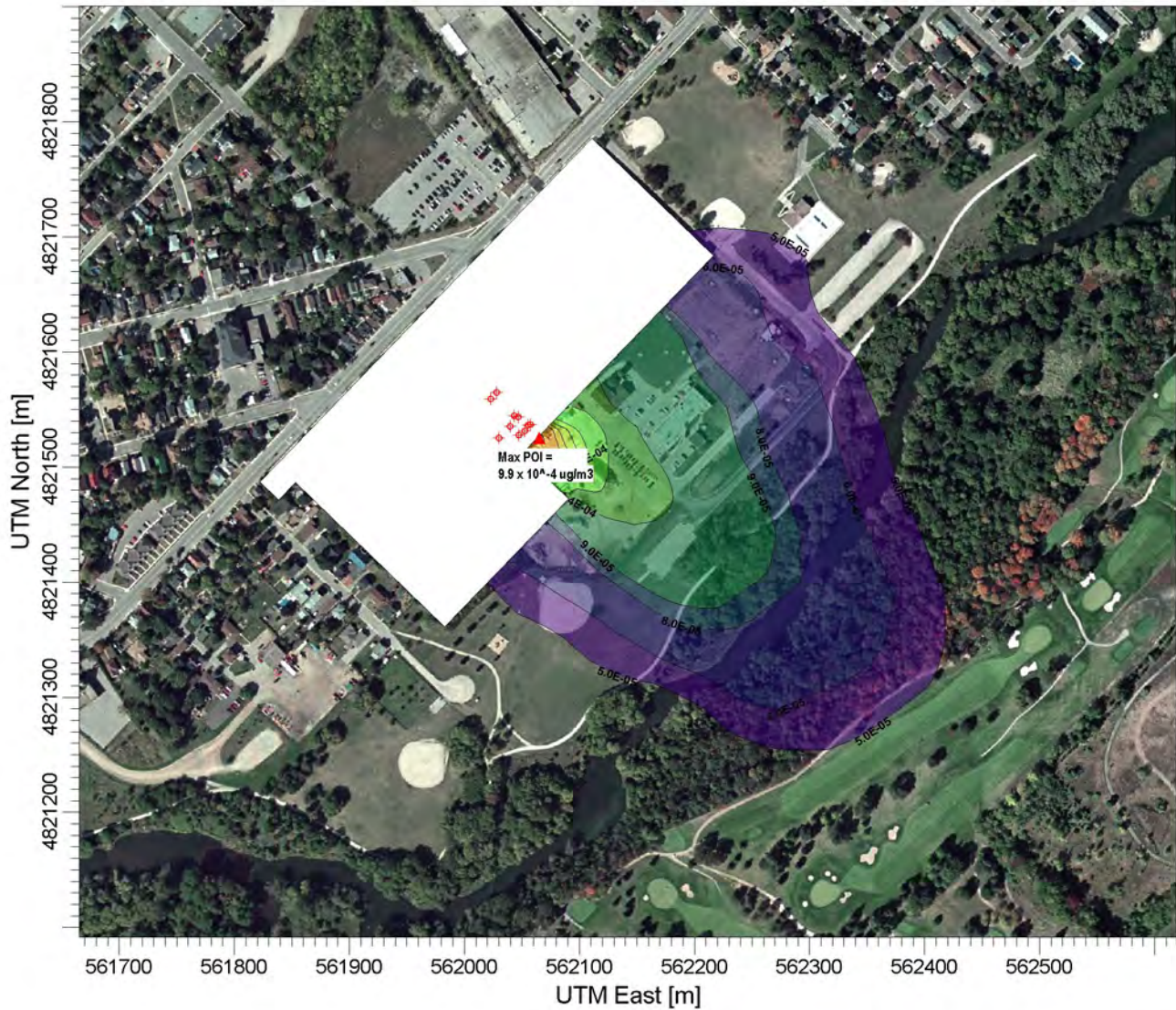
New B32 ER, g/s= 0.0000239 / 2 x 1.15 x (1-0.5)

New B32 ER, g/s= 6.87E-07

RC	Reconfiguration in 2016
RE1	Roof exhausters unchanged by process changes
RE2	Roof exhausters affected by process changes

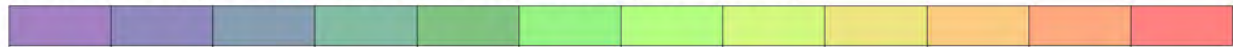
PROJECT TITLE:

**OC Guelph Glass Plant - Annual Average Hexavalent Chromium
Default Pollution Control Combination (ID G_R1) from Technical Benchmarking**





PLOT FILE OF ANNUAL VALUES FOR SOURCE GROUP: ALL MICROGRAMS/M3

Max: 9.9E-04 [MICROGRAMS/M3] at (562063.97, 4821525.92)



5.0E-05 6.0E-05 8.0E-05 9.0E-05 1.4E-04 2.0E-04 4.0E-04 5.0E-04 6.0E-04 7.0E-04 9.0E-04 1.0E-03

COMMENTS: Max POI = 9.9×10^{-4} Met Year 2 Reg 419 Grid	SOURCES: 10	COMPANY NAME: Owens Corning Guelph Glass Plant	
	RECEPTORS: 2062	MODELER: C.MacKay, LEHDER	
	OUTPUT TYPE: Concentration	SCALE: 1:6,000 0  0.2 km	
	MAX: 9.9E-04 MICROGRAMS/M3	DATE: 3/18/2015		PROJECT NO.: 144539

Source Pathway - Source Inputs

AERMOD

Point Sources

Source Type	Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation (Optional) [m]	Release Height [m]	Emission Rate [g/s]	Gas Exit Temp. [K]	Gas Exit Velocity [m/s]	Stack Inside Diameter [m]
POINT	B10	562030.25	4821525.28	312.00	14.45	6.87E-7	321.90	12.10	1.24
		General Exhaust Above T107B F/H							
POINT	B32	562047.16	4821528.02	312.00	14.48	6.87E-7	321.90	19.19	1.24
		General Exhaust Above T106							
POINT	B34	562039.70	4821535.65	312.00	14.48	6.87E-7	321.90	19.19	1.24
		General Exhaust Above T107A F/H							
POINT	B35	562047.03	4821543.82	312.00	14.48	6.87E-7	321.90	19.19	1.24
		General Exhaust Above CFM Main Channel							
POINT	C79	562023.15	4821559.58	312.00	11.64	2.34E-6	310.80	9.59	1.41
		General Exhaust West CFM F/H							
POINT	C80	562028.25	4821564.97	312.00	11.64	2.34E-6	310.80	9.59	1.41
		General Exhaust East CFM F/H							
POINT	B38	562043.48	4821544.79	312.00	16.46	1.06E-6	379.15	5.43	0.75
		105 Forehearth Stack							
POINT	B33	562055.21	4821536.35	312.00	14.48	2.36E-6	321.90	12.59	1.22
		Gen Exhaust Above T105							
POINT	B24	562052.59	4821531.65	312.00	27.77	1.02E-6	597.00	5.89	0.53
		105 Furnace Stack							
POINT	B25	562057.67	4821536.90	312.00	27.77	1.02E-6	597.00	5.89	0.53
		105 Furnace Stack							

Volume Sources

No Volume Sources Specified

Area Sources

No Area Sources Specified

**MODELOPTs: NonDEFAULT CONC ELEV FLGPOL BETA

*** MODEL SETUP OPTIONS SUMMARY ***

**Model Is Setup For Calculation of Average CONCentration Values.

-- DEPOSITION LOGIC --

**NO GAS DEPOSITION Data Provided.

**NO PARTICLE DEPOSITION Data Provided.

**Model Uses NO DRY DEPLETION. DRYDPLT = F

**Model Uses NO WET DEPLETION. WETDPLT = F

**Model Uses RURAL Dispersion Only.

**Model Allows User-Specified Options:

1. Stack-tip Downwash.
2. Model Accounts for ELEVated Terrain Effects.
3. Use Calms Processing Routine.
4. Use Missing Data Processing Routine.
5. No Exponential Decay.
6. BETA Option for Capped & Horiz Stacks Selected With:

5 Capped Stack(s); and 0 Horiz Stack(s)

**Other Options Specified:

CCVR_Sub - Meteorological data includes CCVR substitutions

TEMP_Sub - Meteorological data includes TEMP substitutions

**Model Accepts FLAGPOLE Receptor Heights.

**The User Specified a Pollutant Type of: HCR

**Model Calculates ANNUAL Averages Only

**This Run Includes: 10 Source(s); 14 Source Group(s); and 2062 Receptor(s)

**Model Set To Continue RUNning After the Setup Testing.

**The AERMET Input Meteorological Data Version Date: 14134

**Output Options Selected:

Model Outputs Tables of ANNUAL Averages by Receptor

Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)

Model Outputs Separate Summary File of High Ranked Values (SUMMFILE Keyword)

**NOTE: The Following Flags May Appear Following CONC Values: c for Calm Hours
m for Missing Hours
b for Both Calm and Missing Hours

**Misc. Inputs: Base Elev. for Pot. Temp. Profile (m MSL) = 325.00 ; Decay Coef. = 0.000 ; Rot. Angle = 0.0
Emission Units = GRAMS/S ; Emission Rate Unit Factor = 0.10000E+10
Output Units = NANOGRAMS/M3

**Approximate Storage Requirements of Model = 4.5 MB of RAM.

**File for Saving Result Arrays: Ann_Opt_G_R1_Metyr2.sv1

**File for Summary of Results: Ann_Opt_G_R1_Metyr2.sum

**MODELOPTs: NonDEFAULT CONC ELEV FLGPOL BETA

*** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***
(1=YES; 0=NO)

**MODELOPTs: NonDEFAULT CONC ELEV FLGPOL BETA

*** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER 1 YEARS ***

** CONC OF HCR IN NANOGRAMS/M3 **

GROUP ID	AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	OF TYPE	NETWORK GRID-ID
B10	1ST HIGHEST VALUE IS 0.04012 AT (562050.10, 4821511.55, 311.00, 311.00, 0.00)	DC		
	2ND HIGHEST VALUE IS 0.04012 AT (562050.10, 4821511.55, 311.00, 311.00, 0.00)	DC		
	3RD HIGHEST VALUE IS 0.02875 AT (562076.93, 4821485.66, 310.19, 310.19, 0.00)	DC		
	4TH HIGHEST VALUE IS 0.02875 AT (562076.93, 4821485.66, 310.19, 310.19, 0.00)	DC		
	5TH HIGHEST VALUE IS 0.02713 AT (562070.22, 4821492.13, 310.40, 310.40, 0.00)	DC		
	6TH HIGHEST VALUE IS 0.02713 AT (562070.22, 4821492.13, 310.40, 310.40, 0.00)	DC		
	7TH HIGHEST VALUE IS 0.02679 AT (562057.04, 4821518.74, 311.00, 311.00, 0.00)	DC		
	8TH HIGHEST VALUE IS 0.02679 AT (562057.04, 4821518.74, 311.00, 311.00, 0.00)	DC		
	9TH HIGHEST VALUE IS 0.02637 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC		
	10TH HIGHEST VALUE IS 0.02637 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC		
B24	1ST HIGHEST VALUE IS 0.05293 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC		
	2ND HIGHEST VALUE IS 0.05293 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC		
	3RD HIGHEST VALUE IS 0.04613 AT (562070.91, 4821533.11, 311.00, 311.00, 0.00)	DC		
	4TH HIGHEST VALUE IS 0.04613 AT (562070.91, 4821533.11, 311.00, 311.00, 0.00)	DC		
	5TH HIGHEST VALUE IS 0.04269 AT (562057.04, 4821518.74, 311.00, 311.00, 0.00)	DC		
	6TH HIGHEST VALUE IS 0.04269 AT (562057.04, 4821518.74, 311.00, 311.00, 0.00)	DC		
	7TH HIGHEST VALUE IS 0.03650 AT (562065.76, 4821512.01, 311.00, 311.00, 0.00)	DC		
	8TH HIGHEST VALUE IS 0.03461 AT (562085.76, 4821532.01, 311.00, 311.00, 0.00)	DC		
	9TH HIGHEST VALUE IS 0.03175 AT (562085.76, 4821512.01, 311.00, 311.00, 0.00)	DC		
	10TH HIGHEST VALUE IS 0.02648 AT (562077.84, 4821540.29, 311.01, 311.01, 0.00)	DC		
B25	1ST HIGHEST VALUE IS 0.04940 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC		
	2ND HIGHEST VALUE IS 0.04940 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC		
	3RD HIGHEST VALUE IS 0.04009 AT (562070.91, 4821533.11, 311.00, 311.00, 0.00)	DC		
	4TH HIGHEST VALUE IS 0.04009 AT (562070.91, 4821533.11, 311.00, 311.00, 0.00)	DC		
	5TH HIGHEST VALUE IS 0.03983 AT (562057.04, 4821518.74, 311.00, 311.00, 0.00)	DC		
	6TH HIGHEST VALUE IS 0.03983 AT (562057.04, 4821518.74, 311.00, 311.00, 0.00)	DC		
	7TH HIGHEST VALUE IS 0.03545 AT (562065.76, 4821512.01, 311.00, 311.00, 0.00)	DC		
	8TH HIGHEST VALUE IS 0.03445 AT (562085.76, 4821512.01, 311.00, 311.00, 0.00)	DC		
	9TH HIGHEST VALUE IS 0.02931 AT (562085.76, 4821532.01, 311.00, 311.00, 0.00)	DC		
	10TH HIGHEST VALUE IS 0.02528 AT (562105.76, 4821512.01, 311.00, 311.00, 0.00)	DC		
B32	1ST HIGHEST VALUE IS 0.08470 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC		
	2ND HIGHEST VALUE IS 0.08470 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC		
	3RD HIGHEST VALUE IS 0.07642 AT (562057.04, 4821518.74, 311.00, 311.00, 0.00)	DC		
	4TH HIGHEST VALUE IS 0.07642 AT (562057.04, 4821518.74, 311.00, 311.00, 0.00)	DC		
	5TH HIGHEST VALUE IS 0.06892 AT (562070.91, 4821533.11, 311.00, 311.00, 0.00)	DC		
	6TH HIGHEST VALUE IS 0.06892 AT (562070.91, 4821533.11, 311.00, 311.00, 0.00)	DC		
	7TH HIGHEST VALUE IS 0.06327 AT (562050.10, 4821511.55, 311.00, 311.00, 0.00)	DC		
	8TH HIGHEST VALUE IS 0.06327 AT (562050.10, 4821511.55, 311.00, 311.00, 0.00)	DC		
	9TH HIGHEST VALUE IS 0.04438 AT (562085.76, 4821512.01, 311.00, 311.00, 0.00)	DC		
	10TH HIGHEST VALUE IS 0.04392 AT (562065.76, 4821512.01, 311.00, 311.00, 0.00)	DC		

**MODELOPTs: NonDEFAULT CONC ELEV FLGPOL BETA

*** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER 1 YEARS ***

** CONC OF HCR IN NANOGRAMS/M3 **

GROUP ID	AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	OF TYPE	NETWORK GRID-ID
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B33	1ST	HI	GHEST	VALUE	IS	0.29562	AT	(562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	2ND	HI	GHEST	VALUE	IS	0.29562	AT	(562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	3RD	HI	GHEST	VALUE	IS	0.25393	AT	(	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	4TH	HI	GHEST	VALUE	IS	0.25393	AT	(	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	5TH	HI	GHEST	VALUE	IS	0.23387	AT	(	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	6TH	HI	GHEST	VALUE	IS	0.23387	AT	(	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	7TH	HI	GHEST	VALUE	IS	0.20783	AT	(	562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	8TH	HI	GHEST	VALUE	IS	0.18964	AT	(	562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	9TH	HI	GHEST	VALUE	IS	0.16851	AT	(	562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC
	10TH	HI	GHEST	VALUE	IS	0.16851	AT	(	562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC
B34	1ST	HI	GHEST	VALUE	IS	0.06748	AT	(	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	2ND	HI	GHEST	VALUE	IS	0.06748	AT	(	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	3RD	HI	GHEST	VALUE	IS	0.05800	AT	(	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	4TH	HI	GHEST	VALUE	IS	0.05800	AT	(	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	5TH	HI	GHEST	VALUE	IS	0.05603	AT	(	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	6TH	HI	GHEST	VALUE	IS	0.05603	AT	(	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	7TH	HI	GHEST	VALUE	IS	0.04644	AT	(	562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC
	8TH	HI	GHEST	VALUE	IS	0.04644	AT	(	562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC
	9TH	HI	GHEST	VALUE	IS	0.04229	AT	(	562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	10TH	HI	GHEST	VALUE	IS	0.04150	AT	(	562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC
B35	1ST	HI	GHEST	VALUE	IS	0.06836	AT	(	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	2ND	HI	GHEST	VALUE	IS	0.06836	AT	(	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	3RD	HI	GHEST	VALUE	IS	0.05709	AT	(	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	4TH	HI	GHEST	VALUE	IS	0.05709	AT	(	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	5TH	HI	GHEST	VALUE	IS	0.05418	AT	(	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	6TH	HI	GHEST	VALUE	IS	0.05418	AT	(	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	7TH	HI	GHEST	VALUE	IS	0.04574	AT	(	562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	8TH	HI	GHEST	VALUE	IS	0.04462	AT	(	562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	9TH	HI	GHEST	VALUE	IS	0.04101	AT	(	562085.76,	4821532.01,	311.00,	311.00,	0.00)	DC
	10TH	HI	GHEST	VALUE	IS	0.03141	AT	(	562077.84,	4821540.29,	311.01,	311.01,	0.00)	DC
B38	1ST	HI	GHEST	VALUE	IS	0.12902	AT	(	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	2ND	HI	GHEST	VALUE	IS	0.12902	AT	(	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	3RD	HI	GHEST	VALUE	IS	0.11085	AT	(	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	4TH	HI	GHEST	VALUE	IS	0.11085	AT	(	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	5TH	HI	GHEST	VALUE	IS	0.09734	AT	(	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	6TH	HI	GHEST	VALUE	IS	0.09734	AT	(	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	7TH	HI	GHEST	VALUE	IS	0.08884	AT	(	562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	8TH	HI	GHEST	VALUE	IS	0.08682	AT	(	562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	9TH	HI	GHEST	VALUE	IS	0.07816	AT	(	562085.76,	4821532.01,	311.00,	311.00,	0.00)	DC
	10TH	HI	GHEST	VALUE	IS	0.06428	AT	(	562077.84,	4821540.29,	311.01,	311.01,	0.00)	DC

♀ *** AERMOD - VERSION 14134 ***
 *** AERMET - VERSION 14134 ***

*** OC Guelph Project 144539 - Site Specific Standard
 *** Ann_Opt_G_R1_Metryr2

02/27/15
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**MODELOPTS: NonDEFAULT CONC

ELEV FLGPOL BETA

*** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER 1 YEARS ***

** CONC OF HCR IN NANOGRAMS/M3 **

GROUP ID						AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)					OF TYPE	NETWORK GRID-ID	
C79	1ST	HI	GHEST	VALUE	IS	0.10893	AT	(	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	2ND	HI	GHEST	VALUE	IS	0.10893	AT	(	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	3RD	HI	GHEST	VALUE	IS	0.09493	AT	(	562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	4TH	HI	GHEST	VALUE	IS	0.09149	AT	(	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	5TH	HI	GHEST	VALUE	IS	0.09149	AT	(	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	6TH	HI	GHEST	VALUE	IS	0.08665	AT	(	562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	7TH	HI	GHEST	VALUE	IS	0.08102	AT	(	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	8TH	HI	GHEST	VALUE	IS	0.08102	AT	(	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	9TH	HI	GHEST	VALUE	IS	0.06501	AT	(	562085.76,	4821532.01,	311.00,	311.00,	0.00)	DC
	10TH	HI	GHEST	VALUE	IS	0.06296	AT	(	562105.76,	4821512.01,	311.00,	311.00,	0.00)	DC

Ann_Opt_G_R1_Metry2

C80	1ST	HI	GHEST	VALUE	IS	0.10910	AT	(	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	2ND	HI	GHEST	VALUE	IS	0.10910	AT	(	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	3RD	HI	GHEST	VALUE	IS	0.10763	AT	(	562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	4TH	HI	GHEST	VALUE	IS	0.10032	AT	(	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	5TH	HI	GHEST	VALUE	IS	0.10032	AT	(	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	6TH	HI	GHEST	VALUE	IS	0.08681	AT	(	562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	7TH	HI	GHEST	VALUE	IS	0.07391	AT	(	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	8TH	HI	GHEST	VALUE	IS	0.07391	AT	(	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	9TH	HI	GHEST	VALUE	IS	0.06977	AT	(	562085.76,	4821492.01,	310.52,	310.52,	0.00)	DC
	10TH	HI	GHEST	VALUE	IS	0.06310	AT	(	562056.81,	4821505.08,	310.84,	310.84,	0.00)	DC

FURNACE	1ST	HI	GHEST	VALUE	IS	0.10233	AT	(	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	2ND	HI	GHEST	VALUE	IS	0.10233	AT	(	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	3RD	HI	GHEST	VALUE	IS	0.08622	AT	(	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	4TH	HI	GHEST	VALUE	IS	0.08622	AT	(	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	5TH	HI	GHEST	VALUE	IS	0.08252	AT	(	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	6TH	HI	GHEST	VALUE	IS	0.08252	AT	(	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	7TH	HI	GHEST	VALUE	IS	0.07194	AT	(	562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	8TH	HI	GHEST	VALUE	IS	0.06620	AT	(	562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	9TH	HI	GHEST	VALUE	IS	0.06392	AT	(	562085.76,	4821532.01,	311.00,	311.00,	0.00)	DC
	10TH	HI	GHEST	VALUE	IS	0.04896	AT	(	562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC

FOREHEAR	1ST	HI	GHEST	VALUE	IS	0.12902	AT	(	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	2ND	HI	GHEST	VALUE	IS	0.12902	AT	(	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	3RD	HI	GHEST	VALUE	IS	0.11085	AT	(	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	4TH	HI	GHEST	VALUE	IS	0.11085	AT	(	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	5TH	HI	GHEST	VALUE	IS	0.09734	AT	(	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	6TH	HI	GHEST	VALUE	IS	0.09734	AT	(	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	7TH	HI	GHEST	VALUE	IS	0.08884	AT	(	562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	8TH	HI	GHEST	VALUE	IS	0.08682	AT	(	562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	9TH	HI	GHEST	VALUE	IS	0.07816	AT	(	562085.76,	4821532.01,	311.00,	311.00,	0.00)	DC
	10TH	HI	GHEST	VALUE	IS	0.06428	AT	(	562077.84,	4821540.29,	311.01,	311.01,	0.00)	DC

♀ *** AERMOD - VERSION 14134 ***
 *** AERMET - VERSION 14134 ***

*** OC Guelph Project 144539 - Site Specific Standard
 *** Ann_Opt_G_R1_Metry2

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**MODELOPTS: NonDEFAULT CONC ELEV FLGPOL BETA

*** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER 1 YEARS ***

** CONC OF HCR I N NANOGRAMS/M3 **

GROUP ID						AVERAGE CONC						RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	OF TYPE	NETWORK GRID-ID
GENEXHTS	1ST	HI	GHEST	VALUE	IS	0.76057	AT	(	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	2ND	HI	GHEST	VALUE	IS	0.76057	AT	(	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	3RD	HI	GHEST	VALUE	IS	0.65066	AT	(	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	4TH	HI	GHEST	VALUE	IS	0.65066	AT	(	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	5TH	HI	GHEST	VALUE	IS	0.60741	AT	(	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	6TH	HI	GHEST	VALUE	IS	0.60741	AT	(	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	7TH	HI	GHEST	VALUE	IS	0.54638	AT	(	562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	8TH	HI	GHEST	VALUE	IS	0.51083	AT	(	562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	9TH	HI	GHEST	VALUE	IS	0.44607	AT	(	562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC
	10TH	HI	GHEST	VALUE	IS	0.44607	AT	(	562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC
ALL	1ST	HI	GHEST	VALUE	IS	0.99192	AT	(	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	2ND	HI	GHEST	VALUE	IS	0.99192	AT	(	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	3RD	HI	GHEST	VALUE	IS	0.83051	AT	(	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	4TH	HI	GHEST	VALUE	IS	0.83051	AT	(	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	5TH	HI	GHEST	VALUE	IS	0.80447	AT	(	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	6TH	HI	GHEST	VALUE	IS	0.80447	AT	(	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	7TH	HI	GHEST	VALUE	IS	0.70515	AT	(	562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	8TH	HI	GHEST	VALUE	IS	0.66587	AT	(	562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	9TH	HI	GHEST	VALUE	IS	0.55010	AT	(	562085.76,	4821532.01,	311.00,	311.00,	0.00)	DC
	10TH	HI	GHEST	VALUE	IS	0.54250	AT	(	562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC

0.99192 ng/m3 = 9.9192 x 10^-4

*** RECEPTOR TYPES: GC = GRIDCART
GP = GRIDPOLR
DC = DISCCART
DP = DISCPOLR

*** AERMOD - VERSION 14134 *** *** OC Guelph Project 144539 - Site Specific Standard
*** AERMET - VERSION 14134 *** *** Ann_Opt_G_R1_Metyr2

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*** 08:20:54
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**MODELOPTs: NonDEFAULT CONC ELEV FLGPOL BETA

*** Message Summary : AERMOD Model Execution ***

----- Summary of Total Messages -----

A Total of 0 Fatal Error Message(s)
A Total of 0 Warning Message(s)
A Total of 3 Informational Message(s)

A Total of 8760 Hours Were Processed

A Total of 3 Calm Hours Identified

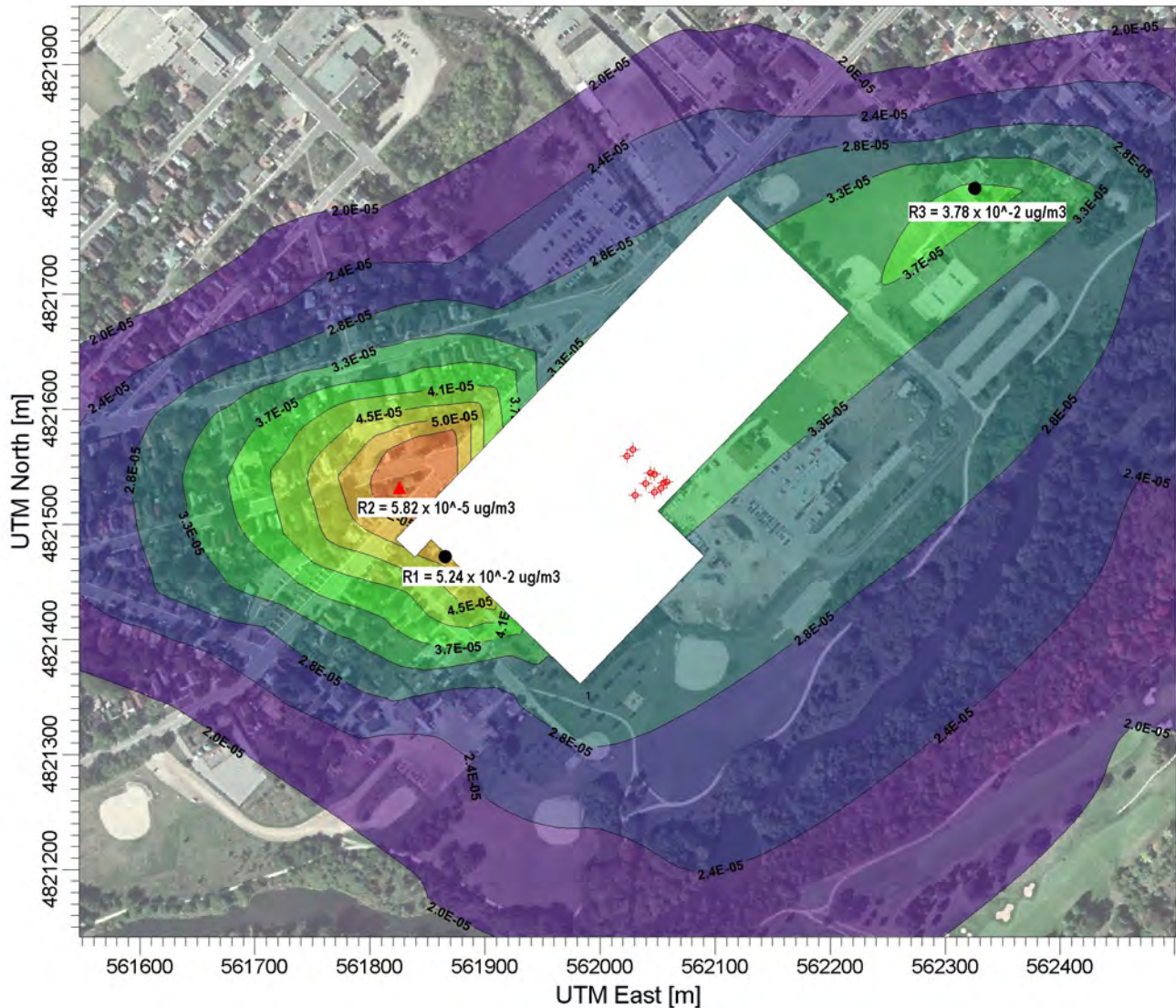
A Total of 0 Missing Hours Identified (0.00 Percent)

***** FATAL ERROR MESSAGES *****
*** NONE ***

***** WARNING MESSAGES *****
*** NONE ***

PROJECT TITLE:

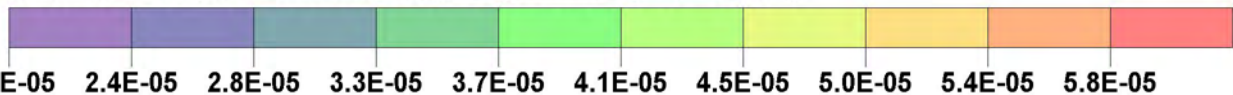
**OC Guelph Glass Plant - Sensitive Receptor Assessment
Default Pollution Control Combination (ID G_R1) from Technical Benchmarking**





PLOT FILE OF ANNUAL VALUES FOR SOURCE GROUP: ALL

MICROGRAMS/M3

Max: 5.8E-05 [MICROGRAMS/M3] at (561825.76, 4821532.01)



<p>COMMENTS:</p> <p>Sensitive Receptor Grid Met Year 1</p> <p>Red Triangle = Max POI concentration Black Circle = Concentration at the location</p>	<p>SOURCES:</p> <p>10</p>	<p>COMPANY NAME:</p> <p>Owens Corning Guelph Glass Plant</p>	
	<p>RECEPTORS:</p> <p>801</p>	<p>MODELER:</p> <p>C. Mackay, LEHDER</p>	
	<p>OUTPUT TYPE:</p> <p>Concentration</p>	<p>SCALE:</p> <p>1:6,000</p> <p>0  0.2 km</p>	
	<p>MAX:</p> <p>5.8E-05 MICROGRAMS/M3</p>	<p>DATE:</p> <p>3/23/2015</p>	

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Ann_Opt_G_R1_AI | SR_R1_yr1
*** AERMOD - VERSION 14134 ***   *** OC Guelph Project 144539 - Site Specific Standard ***   03/04/15
*** AERMET - VERSION 14134 ***   *** Ann_Opt_G_R1_AI | SR_R1_yr1 (MSP_Stage2_Opt_G_R1) ***   07:08:22
**MODELOPTs:  NonDEFAULT CONC      ELEV      FLGPOL      BETA                                     PAGE 1

*** MODEL SETUP OPTIONS SUMMARY ***
-----
**Model Is Setup For Calculation of Average CONCentration Values.
-- DEPOSITION LOGIC --
**NO GAS DEPOSITION Data Provided.
**NO PARTICLE DEPOSITION Data Provided.
**Model Uses NO DRY DEPLETION.  DRYDPLT = F
**Model Uses NO WET DEPLETION.  WETDPLT = F

**Model Uses RURAL Dispersion Only.

**Model Allows User-Specified Options:
1. Stack-tip Downwash.
2. Model Accounts for ELEVated Terrain Effects.
3. Use Calms Processing Routine.
4. Use Missing Data Processing Routine.
5. No Exponential Decay.
6. BETA Option for Capped & Horiz Stacks Selected With:
           5 Capped Stack(s); and           0 Horiz Stack(s)

**Other Options Specified:
CCVR_Sub - Meteorological data includes CCVR substitutions
TEMP_Sub - Meteorological data includes TEMP substitutions

**Model Accepts FLAGPOLE Receptor Heights.

**The User Specified a Pollutant Type of:  HCR

**Model Calculates ANNUAL Averages Only

**This Run Includes:      10 Source(s);      15 Source Group(s); and      801 Receptor(s)

**Model Set To Continue RUNning After the Setup Testing.

**The AERMET Input Meteorological Data Version Date:  14134

**Output Options Selected:
Model Outputs Tables of ANNUAL Averages by Receptor
Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)
Model Outputs Separate Summary File of High Ranked Values (SUMMFILE Keyword)

**NOTE:  The Following Flags May Appear Following CONC Values:  c for Calm Hours
                                                             m for Missing Hours
                                                             b for Both Calm and Missing Hours

**Misc. Inputs:  Base Elev. for Pot. Temp. Profile (m MSL) = 325.00 ; Decay Coef. = 0.000 ; Rot. Angle = 0.0
Emission Units = GRAMS/S ; Emission Rate Unit Factor = 0.10000E+10
Output Units = NANOGRAMS/M3

**Approximate Storage Requirements of Model = 3.9 MB of RAM.

**File for Saving Result Arrays: Ann_Opt_G_R1_AI | SR_R1_yr1.sv1
**File for Summary of Results:  Ann_Opt_G_R1_AI | SR_R1_yr1.sum
*** AERMOD - VERSION 14134 ***   *** OC Guelph Project 144539 - Site Specific Standard ***   03/04/15
*** AERMET - VERSION 14134 ***   *** Ann_Opt_G_R1_AI | SR_R1_yr1 (MSP_Stage2_Opt_G_R1) ***   07:08:22
**MODELOPTs:  NonDEFAULT CONC      ELEV      FLGPOL      BETA                                     PAGE 2

*** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***
(1=YES; 0=NO)

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**MODELOPTs: NonDEFAULT CONC ELEV FLGPOL BETA
 *** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER 1 YEARS ***

GROUP ID	AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	OF TYPE	NETWORK GRID-ID
GENEXHTS	1ST HIGHEST VALUE IS 0.04142 AT (561825.76, 4821532.01, 313.47, 313.47, 0.00)	DC		
	2ND HIGHEST VALUE IS 0.04049 AT (561865.76, 4821572.01, 313.00, 313.00, 0.00)	DC		
	3RD HIGHEST VALUE IS 0.03974 AT (561827.79, 4821564.74, 313.41, 313.41, 0.00)	DC		
	4TH HIGHEST VALUE IS 0.03945 AT (561845.76, 4821572.01, 313.00, 313.00, 0.00)	DC		
	5TH HIGHEST VALUE IS 0.03783 AT (561803.40, 4821564.48, 314.00, 314.00, 0.00)	DC		
	6TH HIGHEST VALUE IS 0.03663 AT (561865.76, 4821472.01, 313.00, 313.00, 0.00)	DC		
	7TH HIGHEST VALUE IS 0.03655 AT (561775.76, 4821542.01, 314.01, 314.01, 0.00)	DC		
	8TH HIGHEST VALUE IS 0.03651 AT (561905.76, 4821432.01, 311.88, 311.88, 0.00)	DC		
	9TH HIGHEST VALUE IS 0.03643 AT (561885.76, 4821452.01, 312.47, 312.47, 0.00)	DC		
	10TH HIGHEST VALUE IS 0.03552 AT (561885.76, 4821592.01, 312.47, 312.47, 4.90)	DC		
HOTSRCs	1ST HIGHEST VALUE IS 0.01740 AT (561865.76, 4821572.01, 313.00, 313.00, 0.00)	DC		
	2ND HIGHEST VALUE IS 0.01686 AT (561825.76, 4821532.01, 313.47, 313.47, 0.00)	DC		
	3RD HIGHEST VALUE IS 0.01635 AT (561845.76, 4821572.01, 313.00, 313.00, 0.00)	DC		
	4TH HIGHEST VALUE IS 0.01599 AT (561827.79, 4821564.74, 313.41, 313.41, 0.00)	DC		
	5TH HIGHEST VALUE IS 0.01577 AT (561865.76, 4821472.01, 313.00, 313.00, 0.00)	DC		
	6TH HIGHEST VALUE IS 0.01530 AT (561885.76, 4821592.01, 312.47, 312.47, 4.90)	DC		
	7TH HIGHEST VALUE IS 0.01496 AT (561865.76, 4821592.01, 313.00, 313.00, 0.00)	DC		
	8TH HIGHEST VALUE IS 0.01485 AT (561845.76, 4821472.01, 313.00, 313.00, 4.90)	DC		
	9TH HIGHEST VALUE IS 0.01470 AT (561803.40, 4821564.48, 314.00, 314.00, 0.00)	DC		
	10TH HIGHEST VALUE IS 0.01438 AT (561845.76, 4821592.01, 313.00, 313.00, 0.00)	DC		
FURNACE	1ST HIGHEST VALUE IS 0.01032 AT (561825.76, 4821532.01, 313.47, 313.47, 0.00)	DC		
	2ND HIGHEST VALUE IS 0.01016 AT (561865.76, 4821572.01, 313.00, 313.00, 0.00)	DC		
	3RD HIGHEST VALUE IS 0.00959 AT (561845.76, 4821572.01, 313.00, 313.00, 0.00)	DC		
	4TH HIGHEST VALUE IS 0.00947 AT (561827.79, 4821564.74, 313.41, 313.41, 0.00)	DC		
	5TH HIGHEST VALUE IS 0.00934 AT (561865.76, 4821472.01, 313.00, 313.00, 0.00)	DC		
	6TH HIGHEST VALUE IS 0.00892 AT (561845.76, 4821472.01, 313.00, 313.00, 4.90)	DC		
	7TH HIGHEST VALUE IS 0.00884 AT (561885.76, 4821592.01, 312.47, 312.47, 4.90)	DC		
	8TH HIGHEST VALUE IS 0.00873 AT (561803.40, 4821564.48, 314.00, 314.00, 0.00)	DC		
	9TH HIGHEST VALUE IS 0.00868 AT (561825.76, 4821472.01, 313.00, 313.00, 0.00)	DC		
	10TH HIGHEST VALUE IS 0.00858 AT (561865.76, 4821592.01, 313.00, 313.00, 0.00)	DC		
FOREHEAR	1ST HIGHEST VALUE IS 0.00725 AT (561865.76, 4821572.01, 313.00, 313.00, 0.00)	DC		
	2ND HIGHEST VALUE IS 0.00676 AT (561845.76, 4821572.01, 313.00, 313.00, 0.00)	DC		
	3RD HIGHEST VALUE IS 0.00654 AT (561825.76, 4821532.01, 313.47, 313.47, 0.00)	DC		
	4TH HIGHEST VALUE IS 0.00652 AT (561827.79, 4821564.74, 313.41, 313.41, 0.00)	DC		
	5TH HIGHEST VALUE IS 0.00646 AT (561885.76, 4821592.01, 312.47, 312.47, 4.90)	DC		
	6TH HIGHEST VALUE IS 0.00643 AT (561865.76, 4821472.01, 313.00, 313.00, 0.00)	DC		
	7TH HIGHEST VALUE IS 0.00638 AT (561865.76, 4821592.01, 313.00, 313.00, 0.00)	DC		
	8TH HIGHEST VALUE IS 0.00610 AT (561845.76, 4821592.01, 313.00, 313.00, 0.00)	DC		
	9TH HIGHEST VALUE IS 0.00598 AT (561803.40, 4821564.48, 314.00, 314.00, 0.00)	DC		
	10TH HIGHEST VALUE IS 0.00593 AT (561845.76, 4821472.01, 313.00, 313.00, 4.90)	DC		

**MODELOPTs: NonDEFAULT CONC ELEV FLGPOL BETA
 *** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER 1 YEARS ***

GROUP ID	AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	OF TYPE	NETWORK GRID-ID
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B10	1ST	HI GHEST	VALUE	IS	0.00348	AT (561865.76,	4821572.01,	313.00,	313.00,	0.00)	DC
	2ND	HI GHEST	VALUE	IS	0.00311	AT (561845.76,	4821572.01,	313.00,	313.00,	0.00)	DC
	3RD	HI GHEST	VALUE	IS	0.00310	AT (	561885.76,	4821592.01,	312.47,	312.47,	4.90)	DC
	4TH	HI GHEST	VALUE	IS	0.00293	AT (	561865.76,	4821592.01,	313.00,	313.00,	0.00)	DC
	5TH	HI GHEST	VALUE	IS	0.00290	AT (	561825.76,	4821472.01,	313.00,	313.00,	0.00)	DC
	6TH	HI GHEST	VALUE	IS	0.00289	AT (	561845.76,	4821472.01,	313.00,	313.00,	4.90)	DC
	7TH	HI GHEST	VALUE	IS	0.00287	AT (	561865.76,	4821472.01,	313.00,	313.00,	0.00)	DC
	8TH	HI GHEST	VALUE	IS	0.00286	AT (	561827.79,	4821564.74,	313.41,	313.41,	0.00)	DC
	9TH	HI GHEST	VALUE	IS	0.00282	AT (	561845.76,	4821592.01,	313.00,	313.00,	0.00)	DC
	10TH	HI GHEST	VALUE	IS	0.00270	AT (	561885.76,	4821612.01,	312.47,	312.47,	0.00)	DC
B24	1ST	HI GHEST	VALUE	IS	0.00503	AT (	561825.76,	4821532.01,	313.47,	313.47,	0.00)	DC
	2ND	HI GHEST	VALUE	IS	0.00484	AT (	561865.76,	4821572.01,	313.00,	313.00,	0.00)	DC
	3RD	HI GHEST	VALUE	IS	0.00466	AT (	561865.76,	4821472.01,	313.00,	313.00,	0.00)	DC
	4TH	HI GHEST	VALUE	IS	0.00461	AT (	561845.76,	4821572.01,	313.00,	313.00,	0.00)	DC
	5TH	HI GHEST	VALUE	IS	0.00458	AT (	561827.79,	4821564.74,	313.41,	313.41,	0.00)	DC
	6TH	HI GHEST	VALUE	IS	0.00447	AT (	561845.76,	4821472.01,	313.00,	313.00,	4.90)	DC
	7TH	HI GHEST	VALUE	IS	0.00433	AT (	561825.76,	4821472.01,	313.00,	313.00,	0.00)	DC
	8TH	HI GHEST	VALUE	IS	0.00425	AT (	561803.40,	4821564.48,	314.00,	314.00,	0.00)	DC
	9TH	HI GHEST	VALUE	IS	0.00422	AT (	561885.76,	4821592.01,	312.47,	312.47,	4.90)	DC
	10TH	HI GHEST	VALUE	IS	0.00412	AT (	561775.76,	4821542.01,	314.01,	314.01,	0.00)	DC
B25	1ST	HI GHEST	VALUE	IS	0.00531	AT (	561865.76,	4821572.01,	313.00,	313.00,	0.00)	DC
	2ND	HI GHEST	VALUE	IS	0.00529	AT (	561825.76,	4821532.01,	313.47,	313.47,	0.00)	DC
	3RD	HI GHEST	VALUE	IS	0.00498	AT (	561845.76,	4821572.01,	313.00,	313.00,	0.00)	DC
	4TH	HI GHEST	VALUE	IS	0.00489	AT (	561827.79,	4821564.74,	313.41,	313.41,	0.00)	DC
	5TH	HI GHEST	VALUE	IS	0.00468	AT (	561865.76,	4821472.01,	313.00,	313.00,	0.00)	DC
	6TH	HI GHEST	VALUE	IS	0.00463	AT (	561885.76,	4821592.01,	312.47,	312.47,	4.90)	DC
	7TH	HI GHEST	VALUE	IS	0.00448	AT (	561803.40,	4821564.48,	314.00,	314.00,	0.00)	DC
	8TH	HI GHEST	VALUE	IS	0.00448	AT (	561865.76,	4821592.01,	313.00,	313.00,	0.00)	DC
	9TH	HI GHEST	VALUE	IS	0.00445	AT (	561845.76,	4821472.01,	313.00,	313.00,	4.90)	DC
	10TH	HI GHEST	VALUE	IS	0.00436	AT (	561825.76,	4821472.01,	313.00,	313.00,	0.00)	DC
B32	1ST	HI GHEST	VALUE	IS	0.00269	AT (	561825.76,	4821532.01,	313.47,	313.47,	0.00)	DC
	2ND	HI GHEST	VALUE	IS	0.00251	AT (	561865.76,	4821572.01,	313.00,	313.00,	0.00)	DC
	3RD	HI GHEST	VALUE	IS	0.00242	AT (	561827.79,	4821564.74,	313.41,	313.41,	0.00)	DC
	4TH	HI GHEST	VALUE	IS	0.00238	AT (	561845.76,	4821572.01,	313.00,	313.00,	0.00)	DC
	5TH	HI GHEST	VALUE	IS	0.00232	AT (	561775.76,	4821542.01,	314.01,	314.01,	0.00)	DC
	6TH	HI GHEST	VALUE	IS	0.00231	AT (	561803.40,	4821564.48,	314.00,	314.00,	0.00)	DC
	7TH	HI GHEST	VALUE	IS	0.00227	AT (	562325.76,	4821842.01,	312.00,	312.00,	0.00)	DC
	8TH	HI GHEST	VALUE	IS	0.00212	AT (	561775.76,	4821492.01,	313.49,	313.49,	0.00)	DC
	9TH	HI GHEST	VALUE	IS	0.00205	AT (	561885.76,	4821592.01,	312.47,	312.47,	4.90)	DC
	10TH	HI GHEST	VALUE	IS	0.00201	AT (	562325.76,	4821792.01,	312.00,	312.00,	4.90)	DC

♀ *** AERMOD - VERSION 14134 ***
 *** AERMET - VERSION 14134 ***

*** OC Guelph Project 144539 - Site Specific Standard
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**MODELOPTs: NonDEFAULT CONC

ELEV FLGPOL BETA

*** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER 1 YEARS ***

** CONC OF HCR IN NANOGRAMS/M3 **

GROUP ID					AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)				OF TYPE	NETWORK GRID-ID	
B33	1ST	HI GHEST	VALUE	IS	0.01208	AT (	561825.76,	4821532.01,	313.47,	313.47,	0.00)	DC
	2ND	HI GHEST	VALUE	IS	0.01144	AT (	561865.76,	4821572.01,	313.00,	313.00,	0.00)	DC
	3RD	HI GHEST	VALUE	IS	0.01132	AT (	561865.76,	4821472.01,	313.00,	313.00,	0.00)	DC
	4TH	HI GHEST	VALUE	IS	0.01100	AT (	561827.79,	4821564.74,	313.41,	313.41,	0.00)	DC
	5TH	HI GHEST	VALUE	IS	0.01092	AT (	561845.76,	4821572.01,	313.00,	313.00,	0.00)	DC
	6TH	HI GHEST	VALUE	IS	0.01090	AT (	561845.76,	4821472.01,	313.00,	313.00,	4.90)	DC
	7TH	HI GHEST	VALUE	IS	0.01066	AT (	561825.76,	4821472.01,	313.00,	313.00,	0.00)	DC
	8TH	HI GHEST	VALUE	IS	0.01033	AT (	561803.40,	4821564.48,	314.00,	314.00,	0.00)	DC
	9TH	HI GHEST	VALUE	IS	0.01010	AT (561775.76,	4821542.01,	314.01,	314.01,	0.00)	DC
	10TH	HI GHEST	VALUE	IS	0.01000	AT (561775.76,	4821492.01,	313.49,	313.49,	0.00)	DC

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B34	1ST	HI	GHEST	VALUE	IS	0.00270	AT	(561825.76,	4821532.01,	313.47,	313.47,	0.00)	DC
	2ND	HI	GHEST	VALUE	IS	0.00253	AT	(561865.76,	4821572.01,	313.00,	313.00,	0.00)	DC
	3RD	HI	GHEST	VALUE	IS	0.00242	AT	(	561827.79,	4821564.74,	313.41,	313.41,	0.00)	DC
	4TH	HI	GHEST	VALUE	IS	0.00240	AT	(	561845.76,	4821572.01,	313.00,	313.00,	0.00)	DC
	5TH	HI	GHEST	VALUE	IS	0.00227	AT	(	561803.40,	4821564.48,	314.00,	314.00,	0.00)	DC
	6TH	HI	GHEST	VALUE	IS	0.00225	AT	(	561775.76,	4821542.01,	314.01,	314.01,	0.00)	DC
	7TH	HI	GHEST	VALUE	IS	0.00223	AT	(	561865.76,	4821472.01,	313.00,	313.00,	0.00)	DC
	8TH	HI	GHEST	VALUE	IS	0.00220	AT	(	561775.76,	4821492.01,	313.49,	313.49,	0.00)	DC
	9TH	HI	GHEST	VALUE	IS	0.00220	AT	(	561845.76,	4821472.01,	313.00,	313.00,	4.90)	DC
	10TH	HI	GHEST	VALUE	IS	0.00214	AT	(	561825.76,	4821472.01,	313.00,	313.00,	0.00)	DC
B35	1ST	HI	GHEST	VALUE	IS	0.00266	AT	(	561865.76,	4821472.01,	313.00,	313.00,	0.00)	DC
	2ND	HI	GHEST	VALUE	IS	0.00263	AT	(	561865.76,	4821572.01,	313.00,	313.00,	0.00)	DC
	3RD	HI	GHEST	VALUE	IS	0.00261	AT	(	561825.76,	4821532.01,	313.47,	313.47,	0.00)	DC
	4TH	HI	GHEST	VALUE	IS	0.00252	AT	(	561845.76,	4821472.01,	313.00,	313.00,	4.90)	DC
	5TH	HI	GHEST	VALUE	IS	0.00246	AT	(	561845.76,	4821572.01,	313.00,	313.00,	0.00)	DC
	6TH	HI	GHEST	VALUE	IS	0.00245	AT	(	561827.79,	4821564.74,	313.41,	313.41,	0.00)	DC
	7TH	HI	GHEST	VALUE	IS	0.00241	AT	(	561825.76,	4821472.01,	313.00,	313.00,	0.00)	DC
	8TH	HI	GHEST	VALUE	IS	0.00231	AT	(	561803.40,	4821564.48,	314.00,	314.00,	0.00)	DC
	9TH	HI	GHEST	VALUE	IS	0.00225	AT	(	561775.76,	4821492.01,	313.49,	313.49,	0.00)	DC
	10TH	HI	GHEST	VALUE	IS	0.00222	AT	(	561885.76,	4821452.01,	312.47,	312.47,	0.00)	DC
B38	1ST	HI	GHEST	VALUE	IS	0.00725	AT	(	561865.76,	4821572.01,	313.00,	313.00,	0.00)	DC
	2ND	HI	GHEST	VALUE	IS	0.00676	AT	(	561845.76,	4821572.01,	313.00,	313.00,	0.00)	DC
	3RD	HI	GHEST	VALUE	IS	0.00654	AT	(	561825.76,	4821532.01,	313.47,	313.47,	0.00)	DC
	4TH	HI	GHEST	VALUE	IS	0.00652	AT	(	561827.79,	4821564.74,	313.41,	313.41,	0.00)	DC
	5TH	HI	GHEST	VALUE	IS	0.00646	AT	(	561885.76,	4821592.01,	312.47,	312.47,	4.90)	DC
	6TH	HI	GHEST	VALUE	IS	0.00643	AT	(	561865.76,	4821472.01,	313.00,	313.00,	0.00)	DC
	7TH	HI	GHEST	VALUE	IS	0.00638	AT	(	561865.76,	4821592.01,	313.00,	313.00,	0.00)	DC
	8TH	HI	GHEST	VALUE	IS	0.00610	AT	(	561845.76,	4821592.01,	313.00,	313.00,	0.00)	DC
	9TH	HI	GHEST	VALUE	IS	0.00598	AT	(	561803.40,	4821564.48,	314.00,	314.00,	0.00)	DC
	10TH	HI	GHEST	VALUE	IS	0.00593	AT	(561845.76,	4821472.01,	313.00,	313.00,	4.90)	DC

♀ *** AERMOD - VERSION 14134 ***
 *** AERMET - VERSION 14134 ***

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**MODELOPTs: NonDEFAULT CONC ELEV FLGPOL BETA

*** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER 1 YEARS ***

** CONC OF HCR IN NANOGRAMS/M3 **

GROUP ID	AVERAGE CONC					RECEPTOR	(XR, YR,	ZELEV,	ZHILL,	ZFLAG)	OF TYPE	NETWORK GRID-ID		
C79	1ST	HI	GHEST	VALUE	IS	0.01141	AT	(	561905.76,	4821432.01,	311.88,	311.88,	0.00)	DC
	2ND	HI	GHEST	VALUE	IS	0.01015	AT	(	561905.76,	4821412.01,	311.81,	311.81,	4.90)	DC
	3RD	HI	GHEST	VALUE	IS	0.01012	AT	(	561885.76,	4821432.01,	312.19,	312.19,	4.90)	DC
	4TH	HI	GHEST	VALUE	IS	0.01012	AT	(	561925.76,	4821412.01,	311.14,	311.14,	0.00)	DC
	5TH	HI	GHEST	VALUE	IS	0.01007	AT	(	561885.76,	4821412.01,	312.00,	312.00,	0.00)	DC
	6TH	HI	GHEST	VALUE	IS	0.01004	AT	(	561885.76,	4821452.01,	312.47,	312.47,	0.00)	DC
	7TH	HI	GHEST	VALUE	IS	0.00991	AT	(	561825.76,	4821532.01,	313.47,	313.47,	0.00)	DC
	8TH	HI	GHEST	VALUE	IS	0.00930	AT	(	561885.76,	4821392.01,	312.00,	312.00,	0.00)	DC
	9TH	HI	GHEST	VALUE	IS	0.00925	AT	(	561865.76,	4821412.01,	312.00,	312.00,	0.00)	DC
	10TH	HI	GHEST	VALUE	IS	0.00921	AT	(	561905.76,	4821392.01,	311.81,	311.81,	0.00)	DC
C80	1ST	HI	GHEST	VALUE	IS	0.00958	AT	(	561827.79,	4821564.74,	313.41,	313.41,	0.00)	DC
	2ND	HI	GHEST	VALUE	IS	0.00948	AT	(	561905.76,	4821432.01,	311.88,	311.88,	0.00)	DC
	3RD	HI	GHEST	VALUE	IS	0.00947	AT	(	561845.76,	4821572.01,	313.00,	313.00,	0.00)	DC
	4TH	HI	GHEST	VALUE	IS	0.00932	AT	(	561803.40,	4821564.48,	314.00,	314.00,	0.00)	DC
	5TH	HI	GHEST	VALUE	IS	0.00931	AT	(	561865.76,	4821572.01,	313.00,	313.00,	0.00)	DC
	6TH	HI	GHEST	VALUE	IS	0.00911	AT	(	561799.38,	4821589.67,	314.00,	314.00,	4.90)	DC
	7TH	HI	GHEST	VALUE	IS	0.00902	AT	(	561885.76,	4821452.01,	312.47,	312.47,	0.00)	DC
	8TH	HI	GHEST	VALUE	IS	0.00901	AT	(	561825.76,	4821532.01,	313.47,	313.47,	0.00)	DC
	9TH	HI	GHEST	VALUE	IS	0.00880	AT	(	561885.76,	4821432.01,	312.19,	312.19,	4.90)	DC
	10TH	HI	GHEST	VALUE	IS	0.00876	AT	(	561775.76,	4821542.01,	314.01,	314.01,	0.00)	DC

ALL	1ST HIGHEST VALUE IS	IS	0.05827 AT (	561825.76,	4821532.01,	313.47,	313.47,	0.00)	DC
	2ND HIGHEST VALUE IS	IS	0.05790 AT (	561865.76,	4821572.01,	313.00,	313.00,	0.00)	DC
	3RD HIGHEST VALUE IS	IS	0.05580 AT (	561845.76,	4821572.01,	313.00,	313.00,	0.00)	DC
	4TH HIGHEST VALUE IS	IS	0.05573 AT (	561827.79,	4821564.74,	313.41,	313.41,	0.00)	DC
	5TH HIGHEST VALUE IS	IS	0.05254 AT (	561803.40,	4821564.48,	314.00,	314.00,	0.00)	DC
	6TH HIGHEST VALUE IS	IS	0.05240 AT (	561865.76,	4821472.01,	313.00,	313.00,	0.00)	DC
	7TH HIGHEST VALUE IS	IS	0.05082 AT (	561885.76,	4821592.01,	312.47,	312.47,	4.90)	DC
	8TH HIGHEST VALUE IS	IS	0.05036 AT (	561775.76,	4821542.01,	314.01,	314.01,	0.00)	DC
	9TH HIGHEST VALUE IS	IS	0.04991 AT (	561845.76,	4821472.01,	313.00,	313.00,	4.90)	DC
	10TH HIGHEST VALUE IS	IS	0.04989 AT (	561885.76,	4821452.01,	312.47,	312.47,	0.00)	DC

0.05827 ng/m3 = 5.827 x 10^-5 ug/m3

*** RECEPTOR TYPES: GC = GRIDCART
 GP = GRIDPOLR
 DC = DISCCART
 DP = DISCPOLR

*** AERMOD - VERSION 14134 *** *** OC Guelph Project 144539 - Site Specific Standard
 *** AERMET - VERSION 14134 *** *** Ann_Opt_G_R1_All_SR_R1_yr1 (MSP_Stage2_Opt_G_R1)

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**MODELOPTS: NonDEFAULT CONC ELEV FLGPOL BETA

*** Message Summary : AERMOD Model Execution ***

----- Summary of Total Messages -----

A Total of 0 Fatal Error Message(s)
 A Total of 0 Warning Message(s)
 A Total of 0 Informational Message(s)
 A Total of 8760 Hours Were Processed
 A Total of 0 Calm Hours Identified
 A Total of 0 Missing Hours Identified (0.00 Percent)

***** FATAL ERROR MESSAGES *****
 *** NONE ***

***** WARNING MESSAGES *****
 *** NONE ***

Annual Hexavalent Chromium Results
Default Option from Technology Benchmarking - 5 year Data set

Run (tab) Name:	Ann_Opt_G_R1_Metyr1	Ann_Opt_G_R1_Metyr2	Ann_Opt_G_R1_Metyr3	Ann_Opt_G_R1_Metyr4	Ann_Opt_G_R1_Metyr5	
Run Description:	Option G_R1, Reg 419 grid, Site Specific Met (2009)	Option G_R1, Reg 419 grid, Site Specific Met (2010)	Option G_R1, Reg 419 grid, Site Specific Met (2011)	Option G_R1, Reg 419 grid, Site Specific Met (2012)	Option G_R1, Reg 419 grid, Site Specific Met (2013)	MAX
Result Units:		ng/m3	ng/m3	ng/m3	ng/m3	ng/m3
ALL	0.84107	0.99192	0.80633	0.86851	0.8331	0.99192
B10	0.03908	0.04012	0.04024	0.04071	0.0402	0.04071
B32	0.07978	0.0847	0.07868	0.08102	0.08023	0.0847
B34	0.05933	0.06748	0.0576	0.06099	0.05966	0.06748
B35	0.05924	0.06836	0.05762	0.06181	0.05927	0.06836
C79	0.08277	0.10893	0.07708	0.08782	0.08021	0.10893
C80	0.07892	0.1091	0.07271	0.08492	0.07221	0.1091
B38	0.11386	0.12902	0.108	0.11646	0.1128	0.12902
B24	0.04733	0.05293	0.04593	0.04748	0.0491	0.05293
B25	0.0429	0.0494	0.04094	0.04253	0.04298	0.0494
B33	0.24981	0.29562	0.23972	0.25766	0.24583	0.29562
FURNACE	0.09023	0.10233	0.08688	0.09	0.09208	0.10233
FOREHEAR	0.11386	0.12902	0.108	0.11646	0.1128	0.12902
GENEXHTS	0.63699	0.76057	0.61145	0.66205	0.62822	0.76057

Run Description:	Option G_R1, Reg 419 grid, Site Specific Met (2009)	Option G_R1, Reg 419 grid, Site Specific Met (2010)	Option G_R1, Reg 419 grid, Site Specific Met (2011)	Option G_R1, Reg 419 grid, Site Specific Met (2012)	Option G_R1, Reg 419 grid, Site Specific Met (2013)	MAX
Result Units:	ug/m3	ug/m3	ug/m3	ug/m3	ug/m3	ug/m3
ALL	0.00084107	0.00099192	0.00080633	0.00086851	0.0008331	0.000992
B10	0.00003908	0.00004012	0.00004024	0.00004071	0.0000402	4.07E-05
B32	0.00007978	0.0000847	0.00007868	0.00008102	0.00008023	8.47E-05
B34	0.00005933	0.00006748	0.0000576	0.00006099	0.00005966	6.75E-05
B35	0.00005924	0.00006836	0.00005762	0.00006181	0.00005927	6.84E-05
C79	0.00008277	0.00010893	0.00007708	0.00008782	0.00008021	0.000109
C80	0.00007892	0.0001091	0.00007271	0.00008492	0.00007221	0.000109
B38	0.00011386	0.00012902	0.000108	0.00011646	0.0001128	0.000129
B24	0.00004733	0.00005293	0.00004593	0.00004748	0.0000491	5.29E-05
B25	0.0000429	0.0000494	0.00004094	0.00004253	0.00004298	4.94E-05
B33	0.00024981	0.00029562	0.00023972	0.00025766	0.00024583	0.000296
FURNACE	0.00009023	0.00010233	0.00008688	0.00009	0.00009208	0.000102
FOREHEAR	0.00011386	0.00012902	0.000108	0.00011646	0.0001128	0.000129
GENEXHTS	0.00063699	0.00076057	0.00061145	0.00066205	0.00062822	0.000761